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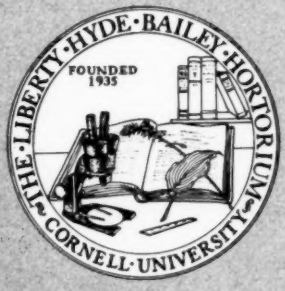

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Notes on the Cultivated Polemoniaceae
4. Gilia

John Ingram

The genus Gilia was named in honor of Felipe Luis Gil, a Spanish botanist of the late eighteenth century, by two Spanish botanical explorers, Hipólito Ruiz Lopez and José Antonio Pavon. They published the genus in 1794 (Florae Peruvianae, et Chilensis prodromus, sive novarum generum Plantarum ... page 25), some years before intensive botanical exploration was begun in western North America. The interesting fact remains that both Gilia and Navarretia, a genus related to Gilia and published in the same work, although discovered in South America, were both later found to have their greatest development in western United States.

Almost a century after its publication, Gilia was interpreted as a large genus, becoming better known than the man for whom it was named. Extensive botanizing in western North America added numerous species to the phlox family, and with this influx of new material, the interpretation of generic limits fluctuated between few to several genera, until, finally, most botanists had assigned all the species of the family to three genera — Phlox, Polemonium, and Gilia. This resulted in Gilia's becoming a large, cumbersome, heterogeneous genus which, as conceived by Asa Gray, swelled to about ninety-five species; however, now that in recent years intensive research on the taxa has given a more accurate circumscription of Gilia, about fifty species are presently retained in it, with the reinstatement of previously described genera and the creation of new ones to accommodate species which no longer belong to Gilia.

About ten species of Gilia, all annuals, are in cultivation in the United States; only three or four are very commonly grown. Three of these, Gilia tricolor, G. achilleaefolia, and G. capitata, were each figured, in color, in Curtis's Botanical Magazine and Edwards's Botanical Register, between the years 1826 and 1836. In spite of this apparent burst of popularity, none of them ever achieved the enviable position in cultivation attained by members of the genus Phlox, nor has any an established common name.

Gilia latifolia Watson (The American Naturalist 9: 347, 1875). This species differs from the other cultivated gilias in its large, broad leaves with deltoid teeth. It is well marked also by its glandular pubescence, rank odor, and its unequal stamens inserted in the corolla-throat. Another distinguishing character is its cream or yellow pollen, which in all other cultivated species is blue or white. This species is native in dry hot desert areas from San Diego County, California, east to Nevada and Utah.

Gilia incisa Bentham in de Candolle (Prodromus 9: 312, 1845). A native of Texas and adjacent Mexico with leafy stems and flowers on long pedicels exceeding 1.5 cm. The leaves are normally toothed to somewhat pinnatifid, but they are inclined to be less toothed on the upper stems (fig. 15B).

Gilia capitata Sims (in Curtis's Botanical Magazine, plate 2698, 1826). This is a heterogeneous species composed of eight subspecies whose affinities have become understood only within the last few years. The species is distinguished from Gilia achilleaefolia chiefly by its inflorescences of 50-100 flowers arranged in dense

Key to the Cultivated Species of Gilia

1. Leaves ovate to roundish, 2-8 cm. long, and 1-5 cm. broad, the margins coarsely toothed to laciniate; flowers pink inside, white or buff outside, the pollen cream or yellow (fig.15A). . . . . .G. latifolia

1. Leaves usually longer than wide, often deeply pinnatifid to 1-3-pinnate; flowers pale blue-violet, whitish, or often bi- or tri- colored, the pollen white or blue.

   2. Stems with well-developed leaves.

      3. Fruiting pedicels 1.5-4.5 cm. or more long. . . . . .G. incisa

      3. Fruiting pedicels not over 1 cm. long.

         4. Corollas pale blue-violet.

            5. Flowers congested in capitate or fan-shaped heads.

               6. Flowers 25-100, in globose heads; stamens exserted (fig.14C). . . . . G. capitata

               6. Flowers 2-25, in fan-shaped heads; stamens included (fig.14B). . . . . G. achilleaefolia

            5. Flowers in small glomerules (fig.14A). . . . . G. laciniata

         4. Corollas tricolored with pale to deep blue-violet lobes, yellow to orange tube, and five purple spots which often form a ring in the throat (fig.14D). . . . . .G. tricolor

   2. Stems with much-reduced leaves, the lower leaves mostly in a well-developed rosette.

      7. Corollas tubular, to 6.5 mm. long; stamens equal; leaves strap-shaped, coarsely dentate or pinnatifid. . . . . .G. leptomeria

      7. Corollas funnelform, the stamens unequal; leaves bipinnate to tripinnate, or strap-shaped and pinnately lobed or sinuately toothed.

         8. Leaves strap-shaped, sinuately toothed or pinnately lobed; corollas 15-22 mm. long, with slender tubes (fig. 16). . . .G. latiflora

         8. Leaves bipinnate or tripinnate; corollas 6-8 mm. long. .G. caruifolia

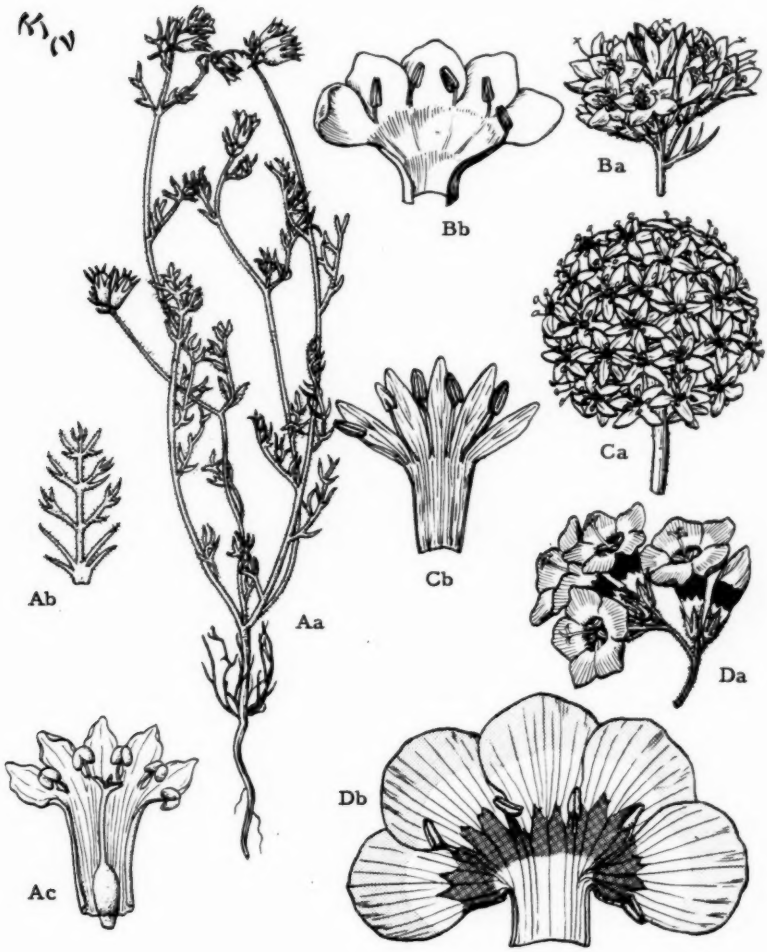

Fig. 14. A, Gilia laciniata (redrawn from Lilloa 8: 216, 1942): a, habit × 4/5; b, leaf × 1 1/2; c, corolla expanded × 5. B, Gilia achilleaefolia (redrawn from Bot. Reg., t. 1682): a, inflorescence; b, corolla expanded. C, Gilia capitata: a, inflorescence × 2; b, corolla expanded × 4. D, Gilia tricolor: a, inflorescence × 1; b, corolla expanded × 2.

spherical heads, and the stamens as long or longer than the corolla-lobes. The typical subspecies, the one most common in cultivation, is native to the region from northern California to British Columbia and Idaho. Only subspecies abrotanifolia (Nuttall ex Greene) V. Grant (El Aliso 2: 371, 1952), in addition to the typical subspecies, is known to be in cultivation. It differs from the typical form in its inflorescences' bearing only 25-50 flowers. It is found growing natively from central California to northern Baja California.

Gilia achilleaefolia Bentham (in Edwards's Botanical Register 19: under plate 1622, 1833). In its overall appearance, Gilia achilleaefolia resembles G. capitata and G. laciniata; however, G. achilleaefolia has 8-25 flowers in a fan-shaped head, and included stamens. It is a native of California, ranging from Santa Barbara County to Marin and Contra Costa counties. Subsp. multicaulis (Bentham) V. & A. Grant (El Aliso 3: 298, 1956) [Gilia multicaulis Bentham in Edwards's Botanical Register 19: under plate 1622, 1833]. This subspecies has flowers in groups of 2-7 and smaller corollas to only 5-10 mm. long. Its range is the same as the typical subspecies.

Gilia laciniata Ruiz & Pavon (Flora Peruviana, et Chilensis sive descriptiones, et icones Plantarum ... 2: 17, t. 123, 1799). This was the first species described in the genus. It is very similar to G. achilleaefolia and G. capitata, but it has much fewer

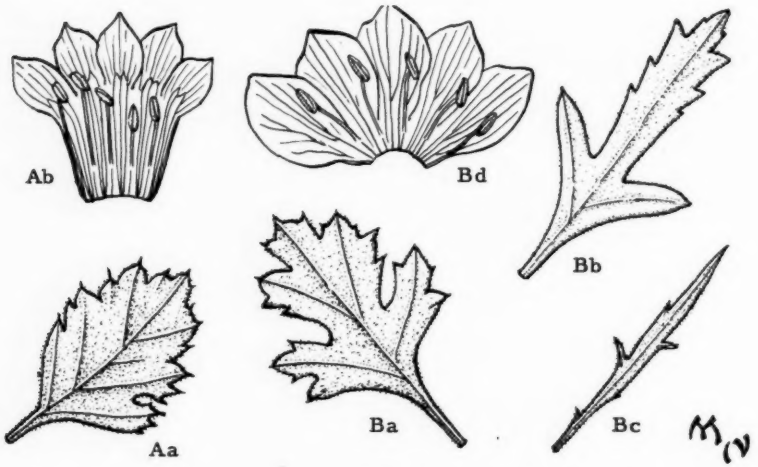

Fig. 15. A, Gilia latifolia: a, leaf × 4/5; b, corolla expanded × 3. B, Gilia incisa: a, b, c, series of leaves from base of plant to inflorescence respectively × 2; d, corolla expanded × 3.

flowers in small glomerules (fig. 14A). Perhaps it could be confused with G. achilleaefolia subsp. multicaulis, from which it differs in its rotately spreading corolla-lobes; the corolla-lobes of both G. capitata and G. achilleaefolia are erect and ascending. This is native from Peru to Chile and Argentina.

Gilia tricolor Bentham (in Edwards's Botanical Register 19: under plate 1622, 1833). Gilia tricolor is readily distinguished by its leafy stems and its large tricolored corollas. It is one of the most showy of the cultivated species. It is native from central to northern California.

Gilia leptomeria Gray (Proceedings of the American Academy of Arts and Sciences 8: 278, 1870). This species is easily separated from the other cultivated scapose gilias by its small tubular flowers, with stamens of equal length. The native habitat for Gilia leptomeria is from eastern Washington to Inyo County, California, east to New Mexico, Colorado, Utah, and Idaho.

Gilia latiflora (Gray) Gray (Synoptical Flora of North America 2(1): 147, 1878). [Gilia tenuiflora Bentham var. latiflora Gray (Proceedings of the American Academy of Arts and Sciences 8: 278, 1870.)] Several subspecies have been segregated within this species but only the typical one has been reported in cultivation. It is a distinctive species with large flowers measuring to 22 mm. long, having a purple tube, yellow and white throat, and white lobes tipped pale violet; it is a native of the southwest Mojave Desert.

Gilia caruifolia Abrams (Bulletin of the Torrey Botanical Club 32: 540, 1905). This species is separable from the other cultivated species by its flowers with the corolla-tube only 3-5 mm. long, and its pale blue-violet corolla-lobes which are whitish with yellow spots above and often bearing a pair of purple spots at their bases. It is a native of dry areas of San Diego County, California, to northern Baja California.

Gilia valdiviensis Grisebach (Abhandlungen der Koniglichen Gesellschaft der Wissenschaften zu Gottingen 6: 131, 1854). This species may have been offered, at one time, in the United States, but it is extremely doubtful that it is still available or even in cultivation.

Appended below is a finding list of those names in Gilia presently current in catalogues and horticultural literature. Those now considered valid species in Gilia are underscored; the remainder are referred to other genera.

Gilia

abrotanifolia Nuttall ex Greene :: Gilia capitata subsp. abrotanifolia
achilleaefolia Bentham
subsp. multicaulis (Bentham) V. & A. Grant

aggregata (Pursh) Sprengel :: Ipomopsis aggregata (Pursh) V. Grant
androsacea (Bentham) Steudel :: Linanthus androsaceus (Bentham) Greene
aurea Nuttall :: Linanthus aureus (Nuttall) Greene
californica (Hooker & Arnott) Bentham in de Candolle :: Leptodactylon californicum Hooker & Arnott
capitata Sims
subsp. abrotanifolia (Nuttall ex Greene) V. Grant
caruifolia Abrams
cephaloidea Rydberg :: Ipomopsis spicata (Nuttall) V. Grant
coronopifolia (Willdenow) Persoon :: Ipomopsis rubra (Linnaeus) Wherry
densiflora (Bentham) Bentham in de Candolle :: Linanthus grandiflorus (Bentham) Greene
dianthoides Endlicher :: Linanthus dianthiflorus (Bentham) Greene
dichotoma (Bentham) Bentham in de Candolle :: Linanthus dichotomus Bentham
floribunda Gray :: Linanthus Nuttallii (Gray) Greene ex Milliken subsp. floribundus (Gray) Munz
globularis Brand :: Ipomopsis spicata (Nuttall) V. Grant subsp. capitata (Gray) V. Grant
grandiflora (Bentham) Steudel :: Linanthus grandiflorus (Bentham) Greene
hybrida :: material so listed is Linanthus androsaceus (Bentham) Greene
incisa Bentham
laciniata Ruiz & Pavon
latiflora (Gray) Gray
latifolia Watson
leptomeria Gray
liniflora Bentham :: Linanthus liniflorus (Bentham) Greene
longiflora (Torrey) G. Don :: Ipomopsis longiflora (Torrey) V. Grant
lutea (Bentham) Steudel :: Linanthus androsaceus (Bentham) Greene subsp. luteus (Bentham) H. L. Mason
micrantha Steudel ex Bentham in de Candolle :: Linanthus androsaceus (Bentham) Greene subsp. micranthus (Steudel ex Bentham in de Candolle) H. L. Mason
multicaulis Bentham :: Gilia achilleaefolia subsp. multicaulis
Nuttallii Gray :: Linanthus Nuttallii (Gray) Greene ex Milliken
punctata (Coville) Munz :: Langloisia punctata (Coville) Goodding
pungens (Torrey) Bentham in de Candolle :: Leptodactylon pungens (Torrey) Rydberg
rubra (Linnaeus) Heller :: Ipomopsis rubra (Linnaeus) Wherry
spicata Nuttall :: Ipomopsis spicata (Nuttall) V. Grant
tricolor Bentham

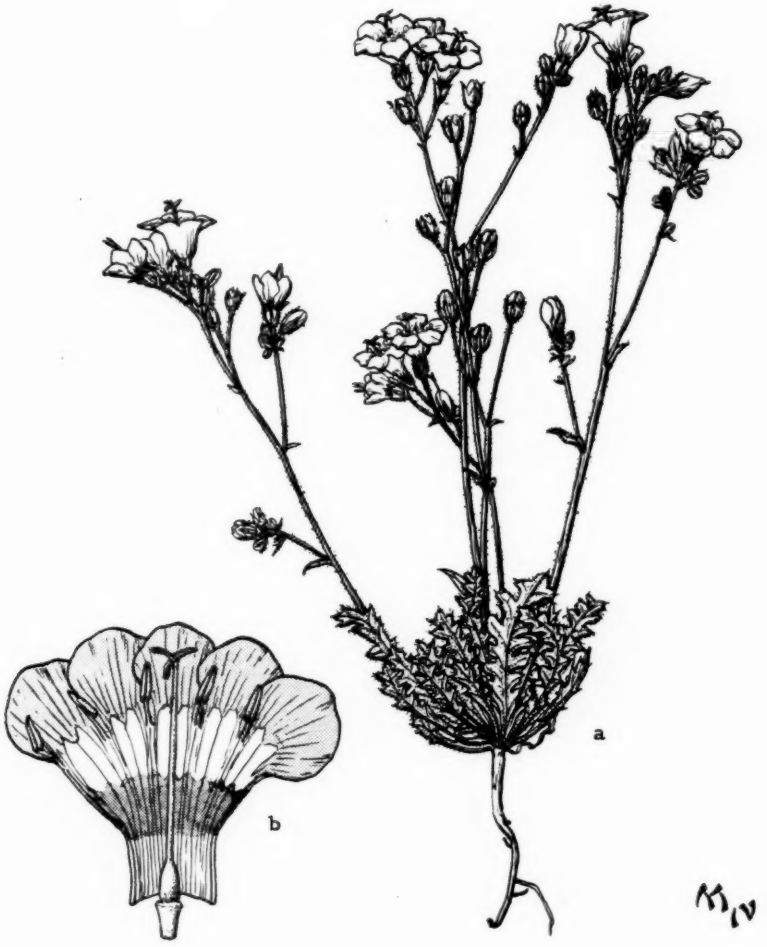

Fig. 16. A, Gilia latiflora subsp. latiflora: a, habit × 3/5; b, corolla expanded × 2.

Fig. 17. Lisianthus nigrescens, plants in flower in a Miami, Florida, garden.

Lisianthus nigrescens

Robert W. Read

Along the roadsides in southern Mexico may be seen a plant which is frequently overlooked by collectors. The reason for this may be the fact that the flowers are not brilliant or otherwise eye-catching. When in full bloom, however, the plant is spectacular, for the flowers are of the very deepest violet-black. We do not often think of flowers as black, except for the mythical black orchid, which is yet to be found. When this species is grown under cultivation as it is now in southern Florida, away from its native clutter of weeds, the luxuriant foliage and the numerous black trumpet-shaped flowers make for a very interesting ornamental.

Lisianthus nigrescens Chamisso and Schlechtendal is a member of the family Gentianaceae, and is known as Flor de muerto by the inhabitants of the region of Chiapas, Mexico. It was noted that the people gather the flowers, which have wonderful lasting qualities, and place them at the shrines along the roads in memory of their dead — thus the common name.

The seeds for those plants now growing in southern Florida came originally from plants growing along the side of the road from Tuxtla Gutierrez to San Cristobal de las Casas, in Mexico. They were growing on the limestone which had been exposed when the road was cut through, and they seemed to thrive in the full sun.

The native plants were only about two feet tall when in full bloom, but in cultivation the plants may reach the height of six feet. Those at the home of George Rosner in South Miami, Florida, grew to a height of six feet and were covered with thousands of flowers. Some of the plants bloomed in the spring of the second year from planting, when only two feet tall, but most of the plants grew much taller before blooming. The species appears to be quite hardy in the almost frost-free regions. The plants in Florida survived being trampled and mowed over, and even a light frost during the first winter. These plants are growing in limestone soil, in both sun and shade. The seed should be handled like that of Petunia or Portulaca, and the soil should be very well drained and on the alkaline side. When the seedlings are large enough to handle they may be

Fig. 18. Lisianthus nigrescens: pair of leaves, branch of inflorescence, and young fruits.

planted directly in the ground in frost-free or nearly frost-free areas, and with some protection from frost they should begin to flower within a year. It is possible that the plant may be grown successfully also in large pots in the greenhouse, in colder regions.

Because of the success which has attended the growing of this interesting plant with the darkest of dark flowers, and since it is expected that a limited amount of seed will soon be available from plants in cultivation, it has been decided to offer samples of the seed to readers who may be interested in growing it for ornament or interest. Seed will be available for the next six months. Correspondents in the United States are asked to send a self-addressed, stamped envelope with their request. Correspondents outside the United States need submit only a request for the seeds. Requests should be addressed to the Editor of Baileya, The L. H. Bailey Hortorium, Cornell University, Ithaca, New York.

ADDITIONAL NOTES ON Eranthis Tubergenii

I read with much interest about this hybrid, introduced by Messrs. van Tubergen of Haarlem, in the recent volume of Baileya (Vol. 8, pages 18 and 19).

This hybrid was raised at our nurseries and was offered for the first time in our catalogue of 1922.

It obtained an Award of Merit on March 6th, 1922, when shown at one of the weekly meetings of the General Bulb Growers Society of Haarlem, and the next year (January 29th, 1923) this award was raised to a First Class Certificate.

The tubers are much bigger than those of either of its parents - E. hyemalis and cilicica - and dividing these is the only way to increase the stock, as the plants are sterile.

However, as might be expected, there was some variation amongst the seedlings raised from the original cross; some resembled more the one parent, E. hyemalis, and others the second species, E. cilicica.

We now have segregated two distinct clonal cultivars, E. Tubergenii 'Glory', which is an improved E. hyemalis with large yellow flowers and fairly broad bright green bract-leaves, and the other E. Tubergenii 'Guinea Gold'. Of this the flowers are somewhat smaller, deep golden-yellow with a bronze tinge; the bract-leaves are narrower, more numerous, and bronzy-tinged. It blooms somewhat later than the cultivar 'Glory', thus prolonging the flowering season.

Th. Hoog, Haarlem, Netherlands

Cissus discolor and Other Names in Blume's Catalogus of 1823

G. H. M. Lawrence

In a recent account of the cultivated members of the genera Cissus and Rhoicissus (Baileya 7: p. 50, 1959) it was pointed out that the name of the species Cissus discolor Blume, a plant with simple silver and purple leaves, might be the subject of a name-change since there was evidence to suggest that de Candolle's name of Cissus javana (1824) might be the older.

In response, Prof. C. G. G. J. van Steenis, editor of Flora Malesiana, has written that this name by Blume dates not from Blume's Bijdragen tot de Flora van Nederlandsch Indië (1825), as is generally accepted, but from Blume's earlier and less known Catalogus van eenige der merkwaardigste zoo in- als uit-heemsche Gewassen ... (1823). This earlier Catalogus, published by Dr. Blume in Batavia, was reproduced by photo-offset through the efforts of the late Dr. E. D. Merrill when Director of the Arnold Arboretum. It is a small quarto volume of 114 pages consisting largely of an enumeration (catalogue) of the plants cultivated at Buitenzorg (now Bogor, Indonesia), arranged according to the Linnaean system of classification. However, throughout the work Blume provided Latin descriptions for about 40 of those species considered and named by him as new to science. One of these was Cissus discolor, whose name and description appear on page 39 of the Catalogus, thus preserving it over Cissus javana de Candolle (1824), which Dr. van Steenis and his colleagues are agreed is for the same plant.

Further study of the 1823 Catalogus, by Professor van Steenis and his colleague, Dr. R. C. Bakhuizen van den Brink, Jr., has shown that the compilers of Index Kewensis missed a majority of the new names published therein by Dr. Blume. Although a list of these names, compiled by Mr. P. Tuyn, has been forwarded by Prof. van Steenis to the editors of Index Kewensis for inclusion in a subsequent Supplement, it seems desirable to make them available in one place for ready reference.

The following is a listing of the names published in Blume's Catalogus on the pages cited, but which are not yet so credited in Index Kewensis. Those names identified by an asterisk (*) are accounted for in Index Kewensis but are cited as having been published by Blume in his later work of 1825. In all instances, Blume is the botanical authority.

Antidesma tomentosa, p. 109
Ardisia pumila, p. 44
*Arum lineatum, p. 102
Azalea mollis, p. 44
A. mucronata, p. 44
Bertiera javanica, p. 45
Bignonia albida, p. 81
Canarinum hispidum, p. 109
Canthium glabrum, p. 45
C. horridum, p. 45
Cissus discolor, p. 39
C. nodosa, p. 39
C. papillosa, p. 39
Citrus javanica, p. 95
Commelina subfruticosa, p. 35 (properly, P. suffruticosa)
Croton incanum, p. 104
*Cryptocarya rubra, p. 65
Elaeocarpus glaber, p. 78
E. obtusus, p. 78
Endespermum, gen. nov., p. 24 not p. 92 as cited in Ind. Kew.
E. scandens, p. 25, not p. 92, as cited in Ind. Kew.
Ficus depressa, p. 35
F. microcarpa, p. 36
F. villosa, p. 37
Geeria serrata, p. 14, not p. 111 as cited in Ind. Kew.
Grewia odorata, p. 79
*Hedyotis prostrata, p. 40
Helyga gen. nov., p. 23 (properly, Helygia)
Helyga javanica, p. 24
*Ipomoea cymosa, p. 50
I. insuavis, p. 50
Jakkia vitellina, p. 18
*Justicia caerulea, p. 31
Leonurus javanicus, p. 83
Loranthus albidus, p. 60
L. atropurpureus, p. 60
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Melastoma pudibunda, p. 71
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Solanum parasiticum, p. 55
Sonerila pauciflora, p. 42
Viola pilosa, p. 51
Vitis sylvestris, p. 57
Zizyphus javanensis, p. 58

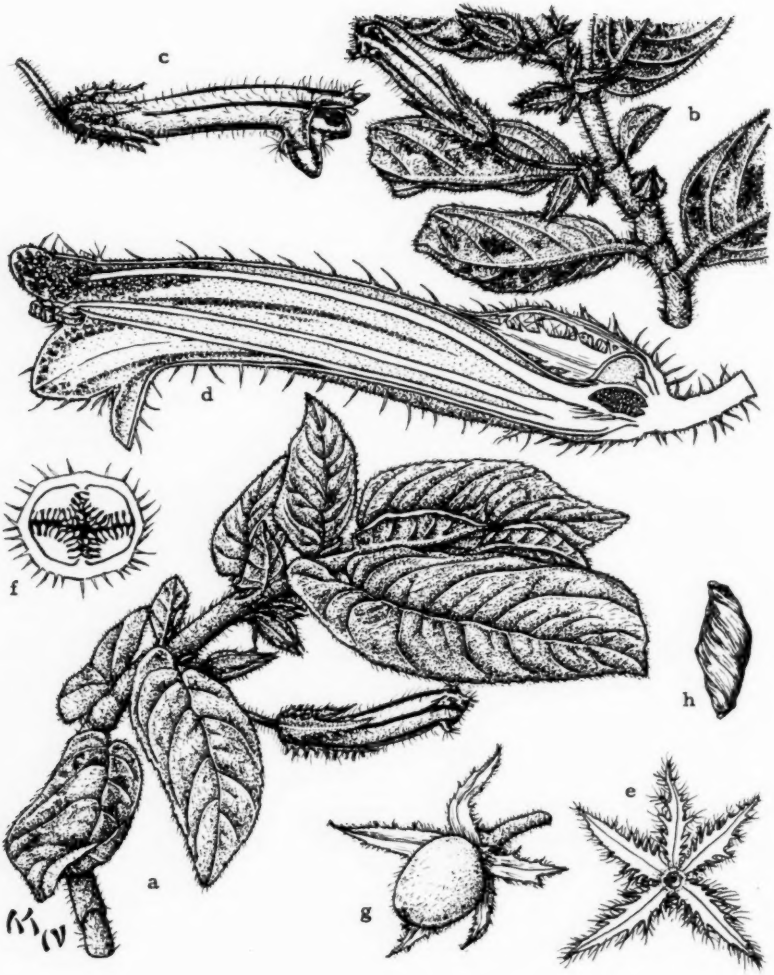

Fig. 19. Columnea illepida: a, flowering stem × 4/5; b, same, showing underside of leaves × 4/5; c, flower × 4/5; d, flower in vertical section × 2; e, calyx expanded × 4/5; f, ovary in cross-section × 8; g, fruit × 1; h, seed × 16.

Columnea illepida, a New Species from Cultivation — and Further Notes on C. Moorei

Harold E. Moore, Jr.

An awkward undescribed Columnea grew for several years in the conservatory at Cornell University without producing open flowers. Buds would form, only to drop before expanding. It has been discovered that this behavior was due to insufficient watering. Early in 1960, plants were given special care and twice-daily watering, with consequent production of expanded flowers.

Although not an attractive horticultural subject, this Columnea is something of an oddity. It is currently grown in a few collections and is being used in cytogenetic study. A formal description is given here to provide a name and to record its unusual character despite lack of information concerning its provenance. Plants were received at Cornell from Mrs. Peggie Schulz of Minneapolis, Minnesota, and are thought to have come from Peru.

Whatever its native place, this species is so distinct as to leave no doubt concerning its status. There are between the corolla-lobes the well-defined appendages characteristic of Hooker's genus Trichantha. This genus was united with Columnea subgenus Stenanthus by Hanstein (Linnaea 34: 387, 1865), was resurrected as a genus by Fritsch (Die natürlichen Pflanzenfamilien 4, 3b: 168, 1894), and again consigned to sectional status (Section Trichantha) within Columnea by Kuntze in Post and Kuntze, Lexicon Generum Phanerogamarum 136, 1904. This last disposition is accepted by Mr. Morton (Baileya 7: 58, 1959) to whom I am grateful for calling my attention to Kuntze's opinion of the taxon and for personal observations on problems relating to Columnea.

The robust awkward nature of the species described herein contrasts so strongly with the graceful vining habit of the other species that the epithet illepida (ungraceful, inelegant) seems appropriate. Foliage is also markedly different, much resembling that of Columnea section Collandra, with coarse leaves strongly unequal in each pair and often blotched with red below.

Columnea (Sect. Trichantha) illepida H. E. Moore, sp. nov.

Herba perennis, caulibus robustis erectis ramosis hispidis: folia breviter pedicellata hirsuta inaequalia, ea longiora asymmetrice lanceolata vel oblongo-ovata vel obovata, ad 9 cm. longa, ad 4 cm. lata, frequenter in facie inferiore rubro-maculata, ea breviora 1.8-4.5 cm. longa, 9-22 mm. lata: flores 1-3(-5) axillares, pedicellati, calycis lobis lanceolatis pectinatis hirsutis, corollae tubo luteo hirsuto inter lobis atro-lineato et appendiculato, lobis subaequalibus subpatentibus atromarginatis superioribus ad medium glandularibus, filamentis staminorum puberulentibus, stigmate bilobato, glandulo dorsali bilobato.

Cultivated at Cornell University, Ithaca, New York, 17 March 1960, H. E. Moore, Jr. 7740 bis (holotype, BH; clonotype, US).

Stems of Columnea illepida are stout, about 1 cm. in diameter, and erect or ascending, green when young, becoming brown in age, rather markedly flexuous with short internodes, densely covered with long stiff erect brownish multicellular glandless hairs. Opposite leaves are very strongly unequal in each pair and all tend to be borne nearly in one plane. Petioles are short, 6-7 mm. long. In outline, the stiff blades vary from excentrically lanceolate to oblong-ovate or obovate, measuring to 9 cm. long, 4 cm. wide for the larger, 1.8-4.5 cm. long and 9-22 mm. wide for the smaller. They are medium green above, covered with a dense coat of erect brownish or reddish hairs similar to those of the stem (reddish especially on margins of new leaves). Six to nine pairs of nerves are impressed above, prominent below and there covered with long erect white hairs as is the pale green and usually red-blotched surface. One to three or even five flowers mature in succession in leaf axils. The white-hairy pedicels to 2.5 cm. long are green with a red blotch at the apex. The calyx is composed of distinct light green lanceolate sepals 1.8 cm. long, 6 mm. wide, which are densely white-hairy outside, glabrous inside, and sharply pectinate with 5-6 teeth on each margin. The corolla-tube is dull lemon-yellow striped with maroon between the lobes nearly from the base. The tube is 4 cm. long, 8 mm. in diameter, gibbous at the base, then abruptly constricted and gradually expanded toward the open throat. Erect white multicellular glandless hairs and a dense coat of very short sharp hairs cover the outside while the inside is puberulent except for a patch of prominent long-stalked glandular hairs at the base of and extending onto the center of the upper two lobes. Yellow appendages 1.6-2 mm. long between the lobes are tufted with long hairs. The upper lobes are 6 mm. long, 5 mm. wide, margined with maroon patches and ciliate or glandular-ciliate, the lateral and lower lobes are similar but more narrowly margined with maroon. Stamen-filaments are attached at and shortly adnate to the base of the tube and are minutely hairy in at least the lower

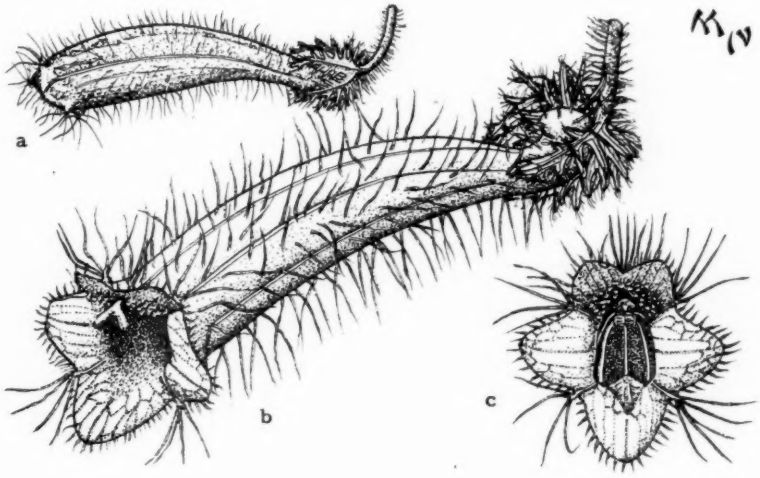

Fig. 20. Columnea Moorei: a, flower in bud × 1; b, flower at anthesis × 2; c, corolla, face view × 2.

two-thirds. A pale bilobed gland forms the disk at the back of the pilose green ovary which extends in a puberulent style and briefly and thickly bilobed green stigma. The placentae are ovuliferous on the inner surface only. Fruit is a pubescent ovoid gray-white berry ca. 17 mm. long and 15 mm. in diameter.

Chromosomes have been counted by Lawrence C. Sherk, of the Department of Floriculture and Ornamental Horticulture, Cornell University. He reports a meiotic number of n = 9.

Although Morton (loc. cit.) has noted that additional undescribed species await study, four may be assigned to the section Trichantha now. These are the original species, C. minor (Hooker) Hanstein and C. major (Hooker) Hanstein, the present species, C. illepida, and C. Moorei Morton. The last was originally placed in section Systelostoma owing to the supposed lack of appendages, but with the suggestion of a possible closer relationship to Columnea minor. Further examination of a series of fresh flowers and especially of buds in January, 1960, showed the presence of distinct but very short appendages, each with a tuft of stiff hairs, between the corolla-lobes. These are illustrated in figure 20 to supplement figure 15 of Baileya 7: 57, 1959, which was drawn from color transparencies

and dried specimens. In fruit, the pedicel of C. Moorei reaches a length of 5 cm. and a width of 4.5 mm. at the apex. The green calyx-lobes are appressed against, and about equal, the ovoid berry. The latter is densely pilosulous with pale-based purple-tipped hairs, has a purplish cast, and measures 12 mm. in length, 11 mm. in diameter. Seeds are whitish, striate, 1.5 mm. long when fresh.

Further resemblances of C. Moorei to at least C. minor and C. illepida are the presence of capitate-glandular hairs on the center of the upper lobes and in the throat below them, and shortly connate stamen-filaments which are only briefly adnate ventrally to the corolla-tube. It may be noted here that the chromosome complement of C. Moorei is 2n = 18 as counted by Catharine Fussell and reported in Baileya 6: 124, 1958 (as "Columnea sp. labelled Columnea II"). This number has been confirmed by Mr. Sherk, who reports a meiotic number of n = 9 (personal communication, 1960) from flowers of the same clone.

The Care and Cultivation of Indoor Plants, by Violet Stevenson. 159 pp., 16 pp. of photographs. Philosophical Library, New York. 1959. $4.75.

To the person who is just beginning to take an interest in growing plants indoors, or who, though with some experience, still feels uncertain about some aspects of the hobby, this book can be warmly recommended. All the little hints and suggestions for growing plants well and with a minimum of fussing, taken for granted by the more experienced but not necessarily so evident to the beginner, are to be found here in a series of nine chapters and a concise chart with information on the likes, dislikes, and feeding and watering requirements of most of the commonly and some less commonly grown kinds. The author's style is completely natural and very readable, to the point and yet with the warmth of personal conversation.

Mrs. Stevenson is British, and her book was originally published in England, but this is of little consequence so far as the value of her instructions is concerned; the range of material commonly grown as house plants in this country is probably somewhat greater, however, and that is probably why some familiar kinds are not mentioned in her book. This American edition also was printed in Great Britain, so it is a bit surprising to find it so expensive, considering its size, and the fact that the original English edition sold for the equivalent of $1.19.

W.J.D.

The Identity of Aesculus neglecta Lindley and A. neglecta 'Erythroblastos'

P. F. Yeo[1]

Aesculus neglecta was first described by Lindley in The Botanical Register 12: t. 1009 (1826); the type specimen, which was used for the colored plate accompanying the description, is in the Cambridge University Herbarium. This specimen has recently been sent to Dr. James W. Hardin, author of a revision of the American Hippocastanaceae, who has identified it as A. octandra Marshall × A. sylvatica Bartram. The name A. neglecta is thus the earliest binomial for this hybrid, antedating A. glaucescens Sargent (compare Hardin 1957a: 193). Dr. Hardin expects to publish a note to this effect in another journal, in which he will also point out that the name A. neglecta is not, as was formerly thought, a synonym of A. sylvatica; in the past it has been used for this species by, for example, Rehder (1940, 1949) and Gleason (1952). Rehder (1949) rejects A. sylvatica Bartram as a nomen subnudum, but Hardin (1957b) accepts the name and gives references to publications in which its validity has been discussed.

There is a striking Aesculus cultivar which has hitherto been known under the name A. neglecta 'Erythroblastos'. The name 'Erythroblastos', meaning "red-budded," refers to the coloring of the young leaves, variously described as "rose," "carmine-rose," "shrimp pink," or "salmon pink." The plant forms a tree which is a very beautiful object for a week or two in April [in England - Ed.] when the leaves are expanding. The mature leaves are a yellowish-green color, and it appears that the pink coloration, normally present in the young leaves, is allowed to show up much more brilliantly because of the deficiency of chlorophyll. That the pink pigment is normal can be seen from its strongly-developed presence in the young leaves of A. pavia and A. pavia × A. sylvatica at Cambridge; owing to the presence of chlorophyll, however, it looks brownish, though it does show up as bright pink in the membranous portions of the bud scales, where there is little or no chlorophyll. In its pink young leaves and yellowish mature leaves 'Erythroblastos' is paralleled by Acer pseudoplatanus 'Brilliantissimum'.

[1]University Botanic Garden, Cambridge, England

The flowers of A. neglecta 'Erythroblastos' are not decorative, being a dull yellowish color, but their characters are important for determination. Hardin (1957b) and other authors use the presence of glands on the pedicel and calyx to distinguish A. octandra from A. sylvatica. Now 'Erythroblastos' has stalked glands on the calyx, and to a lesser extent on the pedicels, and a specimen sent to Dr. Hardin was determined by him as A. octandra × A. sylvatica. This takes 'Erythroblastos' out of A. neglecta as formerly understood (=A. sylvatica), but by chance the same name, A. neglecta, happens to be the correct one for this hybrid, so that the only alteration needed in the name of the cultivar is to add the hybrid sign before the specific epithet! The name and its synonyms are thus as follows:

Aesculus × neglecta Lindley, Bot. Reg. 12: t. 1009 (1826) (pro. spec.) (A. octandra Marsh. × A. sylvatica Bartr.) cv. 'Erythroblastos' Arb. Späth ex Späth-Buch 1720-1920: 149 (1920).

A. neglecta roseo-variegata Louis Späth, Berlin, Catalogue for 1912-1913: 78; L. Späth Catalogues 1913-20.

A. pavia roseo-variegata Behnsch ex L. Späth Catalogues 1913-1920 (pro. syn.).

A. pavia fol. ros. varieg. Behnsch ex Späth-Buch 1720-1920: 149 (1920) (pro. syn.).

Further references to A. × neglecta 'Erythroblastos' are: Hillier (1936), Jenkinson (1936), and Krüssmann (1959). Jenkinson gives an effective photograph of a plant in the young-leaved stage; Krüssmann says that it was first found by Behnsch in Silesia.

The earliest name for the cultivar is 'Roseo-variegata', but since the first appearance of the name 'Erythroblastos' the earlier name appears to have been completely abandoned and, as it might be confusing to revert to the use of 'Roseo-variegata', I suggest the retention of the name 'Erythroblastos', a course which is justified under Article 31 of the International Code of Nomenclature for Cultivated Plants (1958).

In the University Botanic Garden, Cambridge, there is a specimen of A. neglecta 'Erythroblastos' which is probably 25 to 30 years old, and about 6 m. in height; in recent years it appears to have grown 20 to 30 cm. in height per year. The branches are divergent and nearly straight, producing a more or less conical crown. The bark is light buff-brown. There are several specimens at the Westonbirt Arboretum of the Forestry Commission, near Tetbury, Gloucestershire; the largest was planted in 1935 and is about 7 m. high, having the main stem divided low down into numerous leading branches to produce an "open centre" effect. There is a large tree of it at the Botanic Garden, München-Nymphenburg

(Krüssmann, 1959). The mature leaflets are finely serrulate, yellowish-green, dull-surfaced, and slightly rugose, with the lamina convex between the impressed veins. The calyx is cylindrical and glandular.

Aesculus × neglecta 'Erythroblastos' appears to be rather infrequently grown in Britain, though it has been listed in at least one nurseryman's catalogue recently; it has apparently never been offered in the American trade.

I am very grateful to Miss R. C. R. Angel (Royal Botanic Gardens, Kew) and Professor G. H. M. Lawrence (Bailey Hortorium) for supplying information from nurserymen's catalogues and other lists of plants, to Mr. G. Leyshon (Westonbirt Arboretum) for information on living plants, and to Dr. James W. Hardin (North Carolina State College) for the determination of specimens.

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A Brief Review of Classifications in the Araceae

Dan H. Nicolson

Description and comparisons of the major classifications.

The family Araceae is generally agreed to be a natural group of plants. Within the family, the genera are also relatively distinct. The species, however, are not always easily separable, and for this reason the family is often regarded as "difficult." A number of workers have completed classifications of the Araceae; a comparison of these classifications may be of interest, especially since one (Hutchinson 1959) has just recently been revised.

For purposes of this article the classifications of the Araceae are divided into three groups, the pre-Linnaean, the Linnaean, and the modern. A discussion of the pre-Linnaean is outside the scope of this article and is not included here.

Linnaeus (1753) recognized seven genera of Araceae: Acorus, Arum, Calla, Dracontium, Orontium, Pistia, and Pothos. Forty-five years later, Sprengel (1828), in the 16th edition of Linnaeus's Systema Vegetabilium, recognized twelve genera, the following having been added: Ambrosinia, Arisarum, Caladium, Gymnostachys, and Zantedeschia. During that early period classification was often based on inadequate study of poor material. In many cases the difference between a flower and the inflorescence — the spadix subtended by a spathe — was not understood (e.g., from the placing of Arum, the type genus of the family, in Gynandria Polyandria, one would gather that the "flower" of Arum had a large "ovary" with many stamens attached at the top of this "ovary").[1] The result was that generic concepts were not clear and quite unrelated species were sometimes placed in the same genus.

The first important classification of the Araceae in the modern period was that by Heinrich Wilhelm Schott. His first widely available major publication of the Araceae appeared in 1832, just four years after Sprengel's edition of Linnaeus' Systema Vegetabilium,

[1]Today the inflorescence of Arum is understood to be composed of female flowers, sterile flowers, male flowers, and rudimentary flowers, arranged in that order upward along the fleshy axis of the spadix which is subtended by a leafy bract, the spathe.

when Schott and Endlicher published Meletemata Botanica. In that work thirty-nine genera of Araceae were recognized, including such now relatively well-known genera as: Anthurium, Philodendron, Syngonium, Dieffenbachia, Aglaonema, and Spathiphyllum. Schott subsequently deferred publishing major treatments of the Araceae for about thirty years. In 1860 he published his final monograph of the family, the Prodromus Systematis Aroidearum. In this work he recognized 110 genera, almost all of which are still recognized today as genera or as subgenera. Schott's classification was almost entirely based on the variations in floral morphology that he had observed.

In 1883 Hooker published a classification of the genera of the Araceae in Bentham and Hooker's Genera Plantarum. This treatment is very similar to that of Schott's of 1860, with these primary exceptions: (1) certain taxa were changed in rank, (2) a few genera were shifted to other affiliations, and (3) some new characters were substituted. Hooker (1883, p. 956-7) believed that Schott (1860) had proposed too many genera on the basis of single characteristics and that Engler (1879) had wisely reduced many of them. However, he did not accept the system proposed by Engler. Hooker's classification, like Schott's, was based primarily on floral morphology.

Engler (1879, 1905-1920), usually publishing independently but sometimes with Krause, completed two separate monographs of all the then-known genera and species of the Araceae. Not only did Engler do the treatment of the Araceae in the de Candolles' Monographiae Phanerogamarum (1879), in Die natürlichen Pflanzenfamilien (1889), and in Das Pflanzenreich (1905-1920), but he was also author of the treatments of the Araceae in Martius' Flora Brasiliensis (1878) and Beccari's Malesia (1883), and thus had had considerable experience with the family over the world.

Engler's final monograph of the Araceae (1905-1920) represented a radically new classification of the family, compared with those of Schott and Hooker. This classification intended to indicate something of the evolution and phylogeny within the family, whereas Schott (whose work was pre-Darwinian) and Hooker attempted merely to indicate natural affinities. Engler (1920, Heft 74: 62) said (in translation from the German), "The exhaustive study of the floral situation, the shoot associations, the venation, and the anatomical structure of the Araceae have demonstrated that a classification which is exclusively based on the floral situation is impossible to use for a natural grouping." Engler's classification was based primarily on vegetative anatomy and morphology, as well as on floral morphology.

The most recent comprehensive classification of the Araceae is that by Hutchinson (1959). Like Engler's classification, this system is based on evolution and is philosophically quite different from the classifications of Schott (1860) and Hooker (1883).

Hutchinson has had broad experience with the classification of the angiosperms but relied heavily on the work of Hooker (1883) in his treatment of the Araceae. In his own words (1959, p. 629), "For the compilation of the key the Genera Plantarum of Bentham and Hooker has mainly been used, the additional genera contained in Engler's Pflanzenreich having been incorporated." Because of this, Hutchinson's system may be regarded as a revision according to evolutionary principles of Hooker's (1883). It should be noted that it is based primarily on floral morphology.

Discussion.

There have been two major bases of classification in the Araceae -- floral morphology and vegetative morphology — and the basis of each system of classification is reflected and revealed in the keys which accompany it. Keys based on floral morphology typically open with leads such as: (1) flowers unisexual vs. flowers bisexual; (2) flowers with perianth vs. flowers without perianth; (3) stamens joined in synandria vs. stamens distinct. Keys based on vegetative anatomy and morphology typically open with leads such as: (1) laticifers present vs. laticifers absent; (2) sclereids present vs. sclereids absent; (3) venation reticulate vs. venation parallel.

Uses of the classifications.

As can easily be imagined, a person who is not a specialist in the Araceae and who tries to identify an unknown plant will have little patience with a key that requires techniques for studying laticifers, sclereids, or even venation types. Study of such anatomical characteristics may entail embedding, sectioning with a microtome, and observation under a microscope. Since, in the Araceae, a key based on the characteristics of the vegetative organs does necessitate such anatomical studies at times, it would seem to be much easier, when identifying unknown material, to use a key based on external morphological characters such as those of the flowers.

Unfortunately, many of the Araceae, particularly among those grown for their foliage, rarely flower under cultivation. In nature, under conditions of day-length, temperature, and humidity to which the plants are adapted, but which may differ greatly from the conditions in cultivation, these plants may flower frequently but since they seldom do so in cultivation, one can then only hope to identify an unknown plant by means of characteristics of vegetative morphology and anatomy.

It is difficult to estimate the comparative validity of classifications based on the two different aspects of morphological evidence until one has studied all the areas in which they disagree. However, the greater the number of criteria that are considered and weighed in a system, the closer it is likely to be to the truth. On this basis, when discrepancies in affiliations exist between the presently recorded systems, it is the Englerian system which probably should be considered more valid, since it incorporates criteria from vegetative anatomy and morphology as well as from floral morphology, whereas the other systems largely rely only on evidence from floral morphology.

A note on translations of Engler's classification.

The two most important modern-language versions of Engler's treatment of the Araceae (in Latin) are that done earlier by Engler (1898) in Die natürlichen Pflanzenfamilien (in German) and that by Leméé (1941) in his Dictionnaire...phanerogames (in French).

Engler's treatment in Die natürlichen Pflanzenfamilien (1898) is nearly the same as that in his final monograph (1905-1920). The differences are largely at the generic level but a few are at the tribal level.

Leméé's (1941) is based on Engler's (1905-1920) treatment and includes four additional genera published since Engler's work. All the tribes of the subfamilies recognized by Engler are included in synoptic form but are not keyed out, as was done by Engler. Also, the subtribes that Engler recognized are not incorporated and changes in the keys result in an arrangement of genera within tribes differing from that of Engler. A few characters have been added in the keys. Some of these data appear to be original although most have been taken from Engler.

Several authors have attempted to make keys to cultivated Araceae from Engler's and Hooker's classifications. The second edition of Bailey's Cyclopedia of American Horticulture (1902) contains on pp. 72 and 73 a key to those cultivated genera of aroids which come within the scope of that work. It is part of a general "Synopsis of the Vegetable Kingdom," based on the system of Bentham and Hooker, and translated and adapted for the Cyclopedia by Wilhelm Miller. Two keys (in English) to the cultivated genera of Araceae also appear in the first volume of Bailey's Standard Cyclopedia of Horticulture (1914). These were prepared by Karl M. Wiegand. The first of these two keys (for flowering material) was based on Hooker's keys (1883), the second (for vegetative material) on Engler's (1905-1920). The key in Bailey's Manual of Cultivated Plants, Revised Edition, 1949, is based on data from Engler (1905-1920) and Wiegand (1922). This key, unfortunately, equates presence of laticiferous cells with presence of milky sap. Presence

of laticiferous cells may be assumed if milky sap can be demonstrated, but only study of the cells under a microscope can demonstrate whether or not laticiferous cells are present when milky sap cannot be observed. Another key to cultivated genera has recently been published by Encke (1957) in Pareys Blumengärtnerei (in German). This key is based on Engler (1905-1920).

Treatments of the subfamilies appear in Rendle (1904, 1930) and Willis (1936). Both of these treatments are in English. The synopsis of subfamilies is also given in French in Baillon (1895) although the order has been changed. All of these treatments are based on Engler (1898 or 1905-1920).

A complete translation into English of Engler's 1905-1920 classification of subfamilies, tribes, subtribes, and genera of Araceae has recently been made by D. H. Nicolson and W. J. Dress, in connection with a study of the Araceae being carried on at the L. H. Bailey Hortorium. Because of its technical nature and length, it could not be included in Baileya itself, but copies of it are available to interested persons upon request, from the L. H. Bailey Hortorium.

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Fig. 21. Hymenoxys acaulis var. glabra (× 1/2).

Notes on the Cultivated Compositae
5. Hymenoxys

William J. Dress

The various species of Hymenoxys are among the many less well-known attractive yellow-flowered composites which may be used by the keen gardener to supplement or replace some of the better-known kinds in the rock garden or naturalistic garden. Though the composite family is replete with yellow-flowered species, most gardens contain only the same few familiar kinds, used over and over again because their ease of culture and propagation makes them generally and continually available and, it is true, because they are usually also genuinely handsome and satisfactory. In spite of their virtues, however, such ubiquitous things do not often intrigue the horticultural connoisseur as do many less common plants, even though these latter may be less spectacular and more demanding in their care. Unfortunately, none of the species of Hymenoxys is for general use in the garden. Though not especially difficult to cultivate, they are not likely to compete successfully in the mixed border with freer-growing plants; the rock garden is the best place for most of them.

The genus Hymenoxys was set up in 1828 by Comte Alexandre Henri Gabriel de Cassini in his encyclopedic Dictionnaire des Sciences naturelles, vol. 55, p. 278, and was founded on a species described previously by Jussieu, in 1803, as Hymenopappus anthemoides. At present most American botanists accept K. F. Parker's conservative concept of Hymenoxys, which unites in a single genus of about twenty species a multitude of taxa, many of which have appeared in botanical and horticultural literature of the recent past under the generic names Actinea, Actinella, Rydbergia, and Tetraneuris. There are still other generic synonyms which, however, have mostly not been used by botanists for some time. The genus is chiefly western North American, but a few species occur in South America.

Hymenoxys is a member of the Helenieae (or of the Heliantheae, if one follows Cronquist in uniting the Helenieae with that tribe), one of the several tribes into which the Compositae are divided for the sake of convenience. It is a genus of annual and perennial herbs or small subshrubs, sometimes scapose and with entire, mostly basal leaves, sometimes with leafy stems, the leaves then entire, lobed, or pinnatifid. In most instances, the foliage is dotted with impressed, yellowish, translucent glands, and is more or less aromatic when brushed. The yellow-flowered heads may be solitary or borne in corymbs; the involucral bracts are in two or three ranks,

either all distinct (separate from one another) and more or less alike, or the outer rank shorter than the inner and united part of the way up from the base, or distinct. The receptacle is naked — that is, without chaff-like bracts subtending the individual flowers of the central disk. The achenes are five-angled, variously short-hairy, with a pappus consisting of five to eight whitish or translucent, sometimes awned scales. The ray-flowers in this genus tend to become papery and reflexed, and fade to whitish as they age.

Of the cultivated compositae, Hymenoxys is most closely related to Gaillardia and Helenium, but technically Gaillardia differs in having narrow, often bristle-like scales among the florets of the disk, and Helenium differs in having involucral bracts which reflex rather than stand erect and appressed as those of Hymenoxys do. There are other, less absolute differences, but the lines of demarkation separating these genera are rather fine.

The fact that the few species available to horticulturists may be found in catalogues and plant-society seed lists also under the generic names Actinea, Actinella, Rydbergia, or Tetraneuris gives an intimation of the taxonomic and nomenclatural confusion that has long enveloped this assemblage of composites. Since these names are still being used, it may be worthwhile to explain here why they have been superseded by Hymenoxys, in Mrs. Parker's interpretation of the genus.

Actinea was based on Actinea heterophylla, an Argentinian plant, by Jussieu in 1803. Actinea therefore antedates Hymenoxys (1828), but the species upon which it was founded is considered by Mrs. Parker, as by some earlier botanists, to be referable to the genus Helenium, and so Actinea then must be treated as a synonym of Helenium. In 1807 Persoon changed Jussieu's Actinea to Actinella because the name Actinea had also been used for a genus of insects. According to the presently accepted rules governing nomenclature, however, this is not a valid reason for changing a name, since plant names are not affected by the nomenclature of the animal kingdom. Since it is a later, unnecessary name for the taxon named Actinea, it is merely a synonym of Actinea and therefore also of Helenium. (The name Actinella has now been conserved for a genus of algae, to which it was applied in 1864 by Lewis.) As a result, all the other taxa given names under Actinea and Actinella, but not now considered congeneric with Jussieu's Actinea heterophylla, must be assigned a new generic name, and the next available for any of these is Cassini's Hymenoxys of 1828. Tetraneuris was proposed by E. L. Greene in 1898 for most of such other entities, for he, too, felt that Persoon's Actinella heterophylla represented a genus different from that of the species described and named under Actinella by Nuttall and later authors. He did not unite them with Hymenoxys as Mrs. Parker has done (Madroño 10: 159, 1950), for he obviously considered them to represent a separate genus, distinguished from Hymenoxys by their involucral bracts' all being

Fig. 22. Hymenoxys grandiflora (× 2/5).

more or less alike and distinct, rather than in two rather unlike series with the outer ones basally united. (A few American botanists still prefer to make this distinction, and maintain Tetraneuris as a separate genus.) At the same time as he set up Tetraneuris Greene also set up Rydbergia, dedicated to P. A. Rydberg, for two species previously placed in Actinella. This genus, additionally set apart from his Tetraneuris by habit and minor characters of the pappus, is not generally recognized today as distinct.

At present, only five species, with three additional varieties, seem to be available to the gardener who must obtain his material through the usual commercial channels or plant-society seed exchanges. Those five may be distinguished by means of the key below, and by the brief descriptions of them which follow.

Key to the Cultivated Species of Hymenoxys

1. Leaves entire, or the basal ones with a few short lobes.
   2. Plant annual, with leafy stems. . . . . .H. linearifolia
   2. Plant perennial, scapose.
      3. Leaves densely crowded on the stout, shortly branched rootstock; pappus scales 2.5-4 mm. long. . . . . H. acaulis
      3. Leaves imbricated on the usually more slender elongated branches of the rootstock; pappus scales 1-2.5 mm. long. . . . . .H. scaposa
1. Leaves pinnatifid; plants caulescent, the stems leafy.
   4. Heads corymbose, to 4 cm. across. . . . . .H. Cooperi
   4. Heads solitary on the stems, to 8 cm. across. . . . . .H. grandiflora

The species described below are those which are at present or have been recently available to horticulturists in the United States. Some have been offered under different names by different sources. Most species and varieties have several synonyms, but only those which are now to be encountered in catalogues and horticultural literature are cited in connection with the valid names.

Hymenoxys acaulis (Pursh) Parker [Actinea simplex (A. Nelson) A. Nelson; Actinella acaulis (Pursh) Nuttall] is a rather variable species. It is a tufted perennial, forming cushions of leaves in rosettes, the leaves being linear to linear-oblanceolate, entire, and appressed-silky. In some forms the plants are only 4-5 cm. high when in bloom, with leaves 1-2 cm. long, while at the other extreme they may reach a height of 35 cm., with leaves 6 cm. long. The heads are solitary, 1.5-4 cm. across, borne on scapes. In nature it ranges from south-central Canada to Texas. Variety caespitosa (A. Nelson) Parker [Actinella lanata Nuttall] differs in having woolly-villous rather than silky leaves, and many of these lack the usual glandular dots. It is somewhat more western, ranging from southern Idaho to southern California and northern Arizona. Variety glabra (Gray) Parker [Actinea herbacea (Greene) Robinson]

Fig. 23. Hymenoxys linearifolia. From W. J. Hooker, Icones Plantarum 2: tab. 146, 1837.

is eastern in distribution, being found at scattered localities in southern Ontario, Ohio, and Illinois. It has thinly villous leaves which become nearly glabrous with age, and heads to 5 cm. across.

Hymenoxys californica Hooker is sometimes listed in catalogues, but this is a synonym of a species of another genus, Baeria californica (Hooker) Chambers.

Hymenoxys Cooperi (Gray) Cockerell [H. biennis (Gray) Hall] is a biennial or short-lived perennial with one or a few leafy stems which may reach 6 dm. The thinly pubescent leaves are pinnately divided, and the heads, about 4 cm. across, are borne in corymbs at the top of the stems. This is a native of dry areas, from Idaho south to Arizona and eastern California.

Hymenoxys grandiflora (Torrey & Gray ex Gray) Parker [Actinea grandiflora (Torrey & Gray ex Gray) Kuntze; Actinella grandiflora Torrey & Gray ex Gray] is known best under still another of its synonyms, Rydbergia grandiflora (Torrey & Gray ex Gray) Greene. It is a most handsome plant, a woolly perennial from a thickish taproot, with one or a few stout stems 1.5 to 3.5 dm. high bearing scattered pinnatifid leaves (the uppermost are linear and entire) and bright large solitary heads up to 8 cm. across. It is alpine in the Rocky Mountains, from Idaho and Montana south to Utah and Colorado.

Hymenoxys linearifolia Hooker [Actinea linearifolia (Hooker) Kuntze; Tetraneuris linearifolia (Hooker) Greene] is a little-grown branching hairy annual to 3.5 dm. high. The lower leaves are spatulate, usually with a few short lobes, but the upper are all entire and linear. The solitary heads on slender peduncles are only about 2.5 cm. in diameter. It is a plant of the plains, from Louisiana and Kansas west to New Mexico.

Hymenoxys scaposa (de Candolle) Parker [Actinea angustifolia (Rydberg) A. Nelson] is a cespitose perennial sometimes reaching 3 dm. when in bloom, but more often about half that height. The leaves are basal, linear, and entire, sometimes to 10 cm. long, but only 2-6 mm. wide, and are villous-hairy but may become nearly glabrous with age. The solitary heads, 3.5 cm. across or less, are carried on scapes. This species very much resembles H. acaulis, and it is rather difficult to describe in words the differences in aspect that distinguish them, though the pappus length is a quantitative character that may be used with more precision. The branches of the caudex or rootstock tend to be somewhat more slender and elongated than in H. acaulis, and in H. scaposa variety linearis (Nuttall) Parker [Actinella fastigiata (Greene) A. Nelson; Tetraneuris stenophylla Rydberg] they are especially numerous, forming a bushy, woody, mound-like small subshrub. The leaves of the variety are narrower, 1-2 mm. wide. Both the typical variety and var. linearis are native on dry soils from Colorado to Kansas, south to New Mexico, Texas, and Mexico.

Additional Notes on Cultivated Solanums

G. H. M. Lawrence

The publication in the March issue of Baileya of a survey account, with key, of the species of Solanum cultivated in this country has provoked comment and suggestions from plantsmen in the more tropical areas. A summary of these follows.

Solanum diphyllum Linnaeus, a perennial herb usually grown as an annual, is reported by Dr. Erdman West, of Gainesville, to be generally grown over much of Florida. It has also been reported by Dr. D. M. McLean as being cultivated as an ornamental in Texas and as popular in the Corpus Christi area, among others. He observes that it is a rather straggly shrub-like plant reaching a height of 5-6 ft. [2 meters], with small white flowers and yellow to orange fruits approximately 1 cm. in diameter, the latter apparently being its chief claim to ornamental value. These reports reflect the extent to which some species may be grown commonly in a region without, apparently, ever being offered through commercial trade channels. So far as our records show, this is such a species.

Solanum Donnell-Smithii Coulter is reported by D. J. McSwiney, horticulturist for the Florida Federation of Garden Club plant introduction and distribution project nursery, at Fort Lauderdale, Florida, to have been reintroduced by that group in 1958 from stock brought in from Costa Rica by T. J. Newbill of that city.

The same organization reports the introduction of Solanum havanense Jacquin from Cuba in 1954 and that it succeeds in south Florida as a good ornamental. This is a small glabrous shrub of 6-10 dm. in height, with elliptic entire leaves, usually solitary lilac flowers about 2.5 cm. across, and dark blue fruit.

Dr. West also directs attention to the widespread culture in Florida of Solanum jasminoides Paxton. This species is treated in the key (at the bottom of page 24) but since no nomenclatural or taxonomic problems were involved, it was not given attention in the accompanying notes.

The Baileya comment on the culture of Solanum mammosum Linnaeus only in Hawaii (of all U.S.A.) prompted the report from Mr. McSwiney that Costa Rican material distributed by his group in 1958 continues to succeed in southern Florida.

Mrs. Julia F. Morton, of the University of Miami, Florida, reports that Solanum Topiro Humboldt & Bonpland ex Dunal, the cocona, has been cultivated in southern Florida and continues to be grown there. She also notes that fruits of S. verbascifolium Linnaeus - reported as dark purple in Baileya - are so bright a yellow in color as to direct attention to the rampant-growing plants when seen from even a considerable distance.

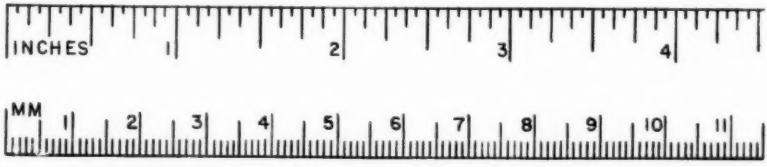
Both Mr. Henry Teuscher and Mrs. Morton reported the fruit of S. quitoense Lamarck to be orange in color and Mr. Teuscher commented that it had a hard rind and was not at all tomato-like in color or substance.

Dr. Lloyd Shinners has taken up, but without discussion, Rafinesque's earlier name of Solanum dimidiatum for what is better known as S. Torreyi Gray, doing so in his Spring Flora of the Dallas - Fort Worth area, Texas. A comparison of Rafinesque's rather complete description with plants of S. Torreyi supports Shinner's conclusion. The name S. dimidiatum was published in Autikon Botanikon, p. 107, 1840, and has priority over S. Torreyi.

Solanum triquetrum Cavanilles, not known to be in the commercial trade, was proposed in Baileya as one species to be dropped from the account of the genus in Hortus III. Dr. Shinners reports it to be grown as a low hedge plant in San Antonio and in Dallas county, Texas. He also reports S. elaeagnifolium Cavanilles as occurring in numerous places in Texas, where it is also native, and deserving of retention in Hortus III.

ABBREVIATIONS USED IN BAILEYA

ann.	annual	dm.	decimeter	lf.	leaf
bien.	biennial	fl.	flower	lft.	leaflet
br.	branch	fls.	flowers	lvs.	leaves
brt.	branchlet	flt.	floret	mm.	millimeter
caps.	capsule	fr.	fruit	per.	perennial
cl.	clone	ft.	foot	segm.	segment
cm.	centimeter	hort.	horticultural	st.	stem
cv.	cultivar	in.	inch	sts.	stems
diam.	diameter	infl.	inflorescence	var.	variety

METRIC - ENGLISH EQUIVALENTS (approximate)

6 mm. - 1/4 in.	10 cm. - 4 in.	10 mm. - 1 cm.
12 mm. - 1/2 in.	1 dm. - 4 in.	10 cm. - 1 dm.
25 mm. - 1 in.	3 dm. - 1 ft.	10 dm. - 1 meter
2.5 cm. - 1 in.	10 dm. - 1 yd.	
5 cm. - 2 in.	1 m. - 39 in.